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Reinhard Weiberle

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EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2112

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|----------------------------------------|--|
| Office Action Summary | Application No. 10/561,634 | Applicant(s) WEIBERLE ET AL. | |
| | Examiner SAM RIZK | Art Unit 2112 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-18 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15,18,20-22,26-28 is/are rejected.
- 7) ☒ Claim(s) 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 November 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

- Response to the applicant's amendment dated 11/9/2009
- Claims 1-14 and 19 have been Cancelled
- Claims 15-18 and 20-28 have been submitted for examination
- Claims 15-18 and 20-22 and 26-28 have been rejected
- Claims 23-25 are objected to

Drawings

1. In view of the new (replacement) drawings filed on 11/9/2009. All objections to the drawings are withdrawn.

Specification

2. In view of the applicant's explanation given and filed on 11/9/2010. All objections to the specification are withdrawn.

Response to Arguments

3. Applicant's arguments and amendments see pages 6-8 filed on 11/9/2009, with respect to the rejection(s) of claims 15-28 under section 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tsuchiya US patent no. 5345582 (Hereinafter Tsuchiya) and in further view of Joyce et al. US patent no. 5148533 (Hereinafter Joyce).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 15-18 and 20-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya and further in view of Joyce.
5. In regard to claim 15, Tsuchiya teaches:
- (Currently Amended) A method for performing an error detection in a cache memory for storing data, the access to the data stored in the cache memory taking place by addresses assigned thereto, comprising:
 - for the addresses assigned to the stored data, generating and storing in the cache memory at least one first test signature made up of at least one first signature bit; and

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(Col. 5, lines (12-25) wherein Tsuchiya teaches test signature (i.e. parity bit(s) for the address data)

However, Tsuchiya does not teach:

- storing a valid-invalid bit at least in duplicate in the cache memory.

Joyce in an analogous art that teach cache memory address monitor for valid/invalid content teaches:

- storing a valid-invalid bit at least in duplicate in the cache memory.

Joyce in an analogous art that teach cache memory address monitor for (Claim 1, lines (18-24) and lines (33-35) in Joyce)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Tsuchiya with the teaching of Joyce that comprises valid/invalid bit protect scheme.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need for improved coherency of the instruction data groups and for coherency of the operand data groups.

6. In regard to claim 16, Tsuchiya teaches:

- (Previously Presented) The method as recited in Claim 15, further comprising: checking the first test signature for each read access to the cache memory.

(Claim 1, step (a) in Tsuchiya)

7. In regard to claim 17, Tsuchiya teaches:

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- (Previously Presented) The method as recited in Claim 15, further comprising:
comparing the at least one stored first signature bit of the first test signature to a
second signature bit of a second test signature that is formed from an address
applied at the cache memory.

(Abstract, lines (15-18) in Tsuchiya)

8. In regard to claim 18, Tsuchiya teaches:

- (Previously Presented) The method as recited in Claim 15, further comprising:
comparing the at least one stored first signature bit of the first test signature to a
second signature bit of a second test signature that is transferred together with
an address applied at the cache memory.

(Claim 1, steps (f)-(1) through (f)-(3) in Tsuchiya)

9. In regard to claim 22, Tsuchiya teaches:

- (Previously Presented) The method as recited in Claim 15, wherein the data
include instructions.

(Abstract in Tsuchiya)

10. Claims 27 and 28 are rejected for the same reasons as per claim 15.

11. In regard to claim 26, Tsuchiya teaches:

- (Previously Presented) The method as recited in Claim 16, further comprising:
detecting at least one error as a function of a respective comparison result; and
if the at least one error is detected, loading the data into the cache memory in
renewed fashion.

(Abstract in Tsuchiya)

12. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya and further in view of Joyce and in further view of the Applicant Admitted Prior Art (Hereinafter AAPA).

.13. In regard to claim 20, Tsuchiya/Joyce teaches substantially all the limitations in claim 15.

However. Tsuchiya/Joyce does not teach:

- (Currently Amended) The method as recited in Claim 15, wherein the valid-invalid bit is stored m-fold and is checked using an n of m test, m, n being natural numbers and m being > 2 and $m > n > m/2$.

AAPA discloses in the argument on page 6, item III filed on 11/9/2009 using n of m test is well know by one of ordinary skill in art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Tsuchiya/Joyce with the AAPA teaching using standard n of m code.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the use of standard error checking code as indicated by the Applicant.

14. Claim 21 is rejected for the same reasons as per claim 20.

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Allowable Subject Matter

15. Claims 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

16. The dependent claim 23 of the present application teaches for example:

The method as recited in Claim 15, further comprising:

to a group of data and appertaining first test signatures, assigning in each case a first line index in the cache memory;

comparing the first line index to a second line index applied at the cache memory; and retrieving the first line index from the cache memory by line decoding.

The foregoing limitations are not found in the prior art of record.

Particularly, none of the prior arts of record teach nor fairly suggest the emphasized limitation as cited in the dependent claim 23 that comprise:

The method as recited in Claim 15, further comprising:

to a group of data and appertaining first test signatures, assigning in each case a first line index in the cache memory;

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comparing the first line index to a second line index applied at the cache memory; and retrieving the first line index from the cache memory by line decoding.

17. Claims 24 and 25 depend from claim 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

/Sam Rizk/

Primary Examiner, Art Unit 2112